

AMENDMENTS TO THE CLAIMS

Please amend claims 1 and 12, cancel claims 3, 8, 15 and 16, and add new claims 20 – 22, as set forth in the listing of claims that follows:

1. (Currently Amended) An electronic package comprising:
- a circuit board having a substrate and circuitry;
 - a surface mount device having a contact terminal;
 - a mounting pad formed on the circuit board; and
 - a solder joint connecting the contact terminal of the surface mount device to the mounting pad on the circuit board, the solder joint comprising a reflowable solder and a plurality of stand-off members disposed in the solder,

 wherein the plurality of stand-off members are electrically conductive, have an affinity for solder and provide a substantially fixed separation distance between the circuit board and surface mount device, in the range of about 0.01 mm to 0.10 mm

 wherein said reflowable solder is formed of monolithic material having a relatively low melting temperature, and

 wherein said stand-off members are composed of an aggregation of a reflowable solder having a relatively high melting temperature and a non-solder material which maintains dimensional integrity at said relatively high melting temperature.

2. (Original) The electronic package as defined in claim 1, wherein the plurality of stand-off members consumes in the range of about 0.001 to 5% of total volume of the solder joint.

3. (Cancelled)

4. (Original) The electronic package as defined in claim 1, wherein the plurality of stand-off members each comprise a hollow member having an outer surface with an affinity for solder.
5. (Original) The electronic package as defined in claim 4, wherein the hollow member comprises a conductive outer surface.
6. (Original) The electronic package as defined in claim 5, wherein the conductive outer surface comprises a high temperature solder material having a reflow temperature higher than a reflowable temperature of the solder.
7. (Original) The electronic package as defined in claim 1, wherein the plurality of stand-off members each comprises an irregularly shaped particle.
8. (Cancelled)
9. (Original) The electronic package as defined in claim 1, wherein the surface mount device comprises an electronic device having electrical circuitry.
10. (Original) The electronic package as defined in claim 1, wherein the plurality of stand-off members comprises at least three stand-off members disposed between the contact terminal and the mounting pad.
11. (Original) The electronic package as defined in claim 1, wherein the separation distance is in the range of about 0.01 mm-0.03 mm.

12. (Currently Amended) A method of forming an electronic package having a controlled height stand-off distance between a surface mount device and a circuit board, said method comprising:

providing a circuit board having a substrate and circuitry;

forming a mounting pad on the circuit board;

providing a surface mount device having a contact terminal;

preforming a plurality of discrete electrically conductive stand-off members having an affinity for solder as an aggregation of a reflowable solder having a relatively high melting temperature and a non-solder material which maintains dimensional integrity at said relatively high melting temperature;

forming a mixture of reflowable solder of the type having a relatively low melting temperature and a said plurality of stand-off members, wherein the plurality of stand-off members each comprises a dimension in the range of about 0.01 mm to 0.10 mm; and

forming a solder joint with the mixture to connect the contact terminal of the surface mount device to the mounting pad on the circuit board, wherein the circuit board and surface mount device are separated by a substantially fixed distance in the range of about 0.01 mm to 0.10 mm.

13. (Original) The method as defined in claim 12, wherein the plurality of stand-off members consumes in the range of about 0.001 to 5% of total volume of the solder joint.

14. (Original) The method as defined in claim 12, wherein the step of forming the solder joint comprises heating the mixture to an elevated solder temperature and bringing the heated mixture into contact with the contact terminal and the mounting pad.

15. (Cancelled)

16. (Cancelled)

17. (Previously Amended) The method as defined in claim 12, further comprising the step of forming each of the plurality of stand-off members as a hollow member having an outer surface with an affinity for solder.

18. (Original) The method as defined in claim 12, further comprising the step of forming the plurality of stand-off members into irregularly shaped particles.

19. (Previously Amended) The method as defined in claim 12, wherein the separation distance H is in the range of about 0.01 mm-0.03 mm.

20. (New) The method as defined in claim 12, wherein the plurality of stand-off members each comprises a dimension in the range of about 0.01 mm to 0.10 mm.

21. (New) The method as defined in claim 12, wherein the circuit board and surface mount device are separated by a distance in the range of about 0.01 mm to 0.10 mm.

22. (New) The electronic package as defined in claim 1, wherein the plurality of stand-off members provide a separation distance between the circuit board and mount device in the range of about 0.01 mm to 0.10 mm.